

出國報告（出國類別：其他－國際會議）

赴馬來西亞參加
「APAARI Vision Exercise」會議

服務機關： 行政院農業委員會

姓名職稱： 盧虎生處長

派赴國家： 馬來西亞

出國期間： 104 年 8 月 3 日至 6 日

報告日期： 104 年 10 月 26 日

摘 要

亞太農業研究機構聯盟（Asia-Pacific Association of Agricultural Research Institutions，以下簡稱 APAARI），係由聯合國糧農組織（Food and Agriculture Organization，簡稱 FAO）於 1990 年所成立之非營利、非政治性聯盟。本(104)年 8 月 4 日至 5 日於馬來西亞吉隆坡舉辦 APAARI Vision Exercise 會議，邀請澳洲、菲律賓、泰國、我國等會員國，討論設立 APAARI 2030 之新願景、任務及目標。此次會議結果新願景擬定為「活躍亞太地區農業與糧食生產研究系統」；任務擬定為 APAARI 將擔任領導之角色，透過與會員國合作、積極建設及宣導政策，推動、整合並強化亞太地區之農業與糧食生產研究系統，以達到農業之永續發展；而最終之目標則為促使亞太地區農業與糧食生產研究系統之效益與價值增加。

“Revised APAARI Vision 2030”之確認版本，預定再精簡為 6 至 7 頁後於 2016 年產出。本次會議參與之各國代表皆相當和諧友善，對 APAARI 之功能相當肯定，會議中也多次提到臺灣之支持，尤其肯定我國在農業生物科技交流方面之貢獻，有利我國外交。我國也應即早回顧檢討我方效益，並研擬在 APAARI 內之發展策略。

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出國報告

壹、 目的

亞太農業研究機構聯盟(Asia-Pacific Association of Agricultural Research Institutions, 以下簡稱 APAARI), 係由聯合國糧農組織(Food and Agriculture Organization, 簡稱 FAO) 於 1990 年所成立之非營利、非政治性聯盟, 至今已近 25 年。其成員包含亞太地區各國之農業研究機構、大學與政府組織等, 我國則於 1999 年加入。APAARI 當初成立目的為強化亞洲太平洋地區之國家級農業研究機構間(National Agriculture Research Systems, NARS) 之聯繫與成果交流, 旨在培育亞太地區農業技術之研究發展, 鼓勵會員國間相互合作與技術交流, 針對重要農業議題舉辦研討會、訓練班並進行知識與資訊分享, 並以減少飢餓與貧窮, 促使農業生產永續。

APAARI 成立以來確實已達到各參與國家之研究機構間密切交流, 也帶動了亞洲太平洋區域內之農業科技發展。其重大之策略規劃活動可分為兩階段, 第一階段為 1995 年至 2000 年間之籌備計畫, 第二階段則是展望 2025, 曾於 2000 年設立“APAARI Vision 2025”, 以釐訂發展目標及策略。回顧過去 20 年, APAARI 提供了許多有效平台, 研商農業議題與發表創新研究, 其成果豐碩。未來 APAARI 將更廣大、多元且嚴謹地促使亞太地區農業有效並快速轉型。

惟近年來國際科技及社會經濟環境也發生了相當變化, 故有必要因應環境變化, 為下一個時期重新調整, 設立新的願景(Vision)、任務(Mission) 及發展策略(Strategy)。故此次會議之目的即邀請各主要會員國代表, 進行腦力激盪之規劃會議, 討論 “APAARI Vision 2030” 草案, 擬訂願景、任務及發展策略之初稿, 作為後續正式會議確認之基礎。

貳、 基本資料

- 一、 出國期間：104 年 8 月 3 日至 6 日
- 二、 出國地點：馬來西亞農業研究發展所 (Malaysian Agriculture Research and Development Institute, MARDI)，位於馬來西亞吉隆坡
- 三、 行程概況（議程詳如附件 1）

時 間	行 程 內 容
8 月 3 日 (星期一)	各國代表報到。
8 月 4 日 (星期二)	<ol style="list-style-type: none">1. 由秘書長 Dr. Raghunath Ghodacke 說明此次會議背景及目的。2. 由此次會議主席 Dr. Simon Hearn 介紹各會員代表及此次會議議程。3. 接著由 Dr. Mruthyunjaya 說明其草擬之“Revised APAARI Vision 2030”內容。說明此草擬之初稿是依據 2014 年出版之“Twenty Two Years of APAARI – A Retrospective”內容及國際發展趨勢而擬定撰寫之。4. 接續由 Dr. Ajit Maru 帶領各隊員進行共識討論，研擬 Vision。
8 月 5 日 (星期三)	<ol style="list-style-type: none">1. 繼續由 Dr. Ajit Maru 帶領各隊員進行共識討論。開始時各代表間確實呈現相當之歧異性，近中午時逐漸形成共識。2. 於下午開始研擬文字內容。
8 月 6 日 (星期四)	返回臺灣。

- 四、 與會人員：包括澳洲、菲律賓、泰國、印度、馬來西亞、我國等會員國代表（名單詳如附件 2）。

參、 過程

- 一、 本次會議係以腦力激盪之方式，由各國代表在聯合國糧農組織(Food and Agriculture Organization, FAO)全球農業論壇(Global Forum on Agricultural Research, GFAR)之資深計畫專員 Dr. Ajit Maru 之引導下，進行 2 天之共識會議，草擬出 “Revised APAARI Vision 2030” 之相關內容(詳如附件 3)重點如下：

(一) APAARI 將扮演之新角色

儘管亞太地區之政治、社會及經濟已快速發展中，但貧窮與飢餓問題仍持續存在，故 APAARI 在 2015 年後之工作目標，將著重在永續發展 (Sustainable Development Goals, 簡稱 SDGs)，而農業與糧食生產研究系統之轉型則為達到零飢餓與零貧窮之重要關鍵。藉由回顧前期之工作成果，APAARI 已歸納出亞太地區農業與糧食生產研究系統於 2015 年後之發展方向，並可分為三個層面分析：滿足亞太地區之總體需求、因應之挑戰、尋求新興機會並加以應用，其分述如下：

1. 滿足亞太地區之總體需求

由於工業化及都市化之緣故，亞太地區之農村勞力結構逐漸老化，且婦女成為主要之生產力來源，但婦女之地位不受重視，加上農村與都市間之資源分配不均，除了婦女，小農與農村青年也難以獲得合理之土地及各項資源，使得農村人口難以擺脫貧窮。未來 APAARI 之轉型，將以小農、婦女、青年與消費者為主要對象，力求提升其於全球市場之參與度及競爭力。

為改善農村生活，APAARI 將促進農村之非農經濟(Rural Non-Farm Economy, RNFE) 發展，以增加多元收入。然而非農經濟之發展常受政策、市場及人力資源影響，故需再強化二級農業(Secondary Agriculture)，以創新發展之方式，促使農業基礎經濟轉變為農產品生產及服務經濟，再進一步轉變為農業知識經濟。透過

改善農村基礎設施、創辦學校、加強人才培育並設置農業園區等，將可減少農村之飢餓、貧窮與人口外移，為農產品帶來附加價值，增加工作機會與對外連結，以期帶動農村經濟發展，甚至刺激都市經濟，並擴及全球。

除 APAARI，亞太地區亦有許多具相似目標之國際農業機構與組織，為打破各機構組織間之藩籬，APAARI 將促使各機構組織間加強交流，彼此互補並發揮所長，鼓勵其建立公私部門夥伴關係，提供諮詢、策略宣傳及同行評審等服務，以獲得共同利益。除現有之夥伴，APAARI 也將繼續擴增合作對象，並積極鼓勵仍較落後且封閉之國家加入，以引導其轉型。

為使整體亞太地區達到永續經營，除持續發展及建設以滿足總體需求外，APAARI 亦將注重各文化資產之保存。因文化資產代表國家之歷史變遷與榮耀，包含有先人之智慧，皆可做為後人所用。

2. 因應之挑戰

由於亞太地區之持續開發，其人口不斷地增加，糧食及能源需求也隨之提高，預估至 2050 年時，亞太地區所需要之糧食將為現在的兩倍，因此如何生產充足、安全、營養且便宜之糧食及永續利用能源將成為一大挑戰。

雖然亞太地區之人口持續增加，但受到土壤流失、水資源缺乏、氣候變遷、極端氣候、災難發生率提高及跨邊界病害傳播之影響，該地區糧食增產速率卻是趨緩甚至下降，嚴重影響糧食安全。然而為增加糧食生產，森林被過度開發為耕地，使自然資源被嚴重破壞，反而不利於能源生產。除環境與災難問題所形成之挑戰，近年許多國家之農業預算逐漸減少，農產值低落，許多政策與社會問題並不利於農業發展，且通貨膨脹更導致食物及能源價格飆漲，使得人們負擔增加，窮者更窮，危害社會經濟發展。

為因應上述各項挑戰，增加農業科技研發之投入與促進農產業

發展是必需的，如復育森林、加強病害防治、降低氣候變遷所帶來之風險、開發乾淨之新興能源、培育農業人才及跨領域合作等，皆為重要之策略，再進一步透過政策之配合，擴大農產業市場，改善投資環境，強化農民與市場間之連結，創造農產加值鏈，以期改善農村生活，並因應人們受全球化及都市化影響所改變之飲食習慣與健康觀念，達到永續發展之目標。

3. 尋求新興機會並加以應用

為解決亞太地區之糧食安全問題，政策之引導、各國際農業組織之公私部門夥伴關係與科技創新研發，需由上而下串連，以促成更多之機會並加以應用。

亞太地區具有超過世界 63% 之人口處於飢餓、超過世界 50% 之人口處於極端貧窮、超過世界 70% 之孩童營養不良，且經濟發展使得糧食需求之壓力增加，而全球之捐款與物資卻較傾向給予非洲，使得亞太地區不易獲得足夠之外界資源，因此更需藉由上而下之串聯，促使此地區之農業與糧食生產研究系統轉型，以改善上述各種問題。

農業與糧食生產系統之轉型必定為一條艱難的道路。隨著時代與環境之變遷，各項挑戰與需求也在改變當中，故許多的政策與科技研發方向也需隨之調整，以創造多元機會。APAARI 未來將定位在各盟友間最可信賴之夥伴，鼓勵政府改革，刺激更多相關利益者投入，並促使各農業組織將永續發展納入其章程中且相互合作，以加速農生產研究系統轉型，使整體亞太地區得以永續發展。

(二) APAARI 之願景(Vision)、任務(Mission)及發展目標(Goal)

在團隊成員釐清 APAARI 未來面臨之需求、挑戰與機會並達成共識後，Dr. Ajit Maru 繼續帶領各隊員分組並進行共識討論，以 2030 年為明確之時間點，討論出 APAARI 發展之願景、任務及發展目標如下：

1. 願景：此次會議結果新願景擬定為「活躍亞太地區農業與糧食研究系統」(Vibrant Agriculture and Food Research Systems in the APR)。
2. 任務：擬定為 APAARI 將擔任領導之角色，透過與會員國合作、積極建設及宣導政策，推動、整合並強化亞太地區之農業與糧食研究系統，以達到農業之永續發展 (APAARI to take a leadership role in promoting, coordinating and strengthening agriculture and food research systems through partnership, capacity development and policy advocacy for sustainable agricultural development in the APR)。
3. 目標：透過執行策略之推動，將促使亞太地區農業與糧食研究系統之效益與價值增加 (The APR benefits and values APAARI's contribution to agriculture and food research system)。

二、 有關 APAARI 依據前述願景、任務及目標擬推動之執行策略(Strategic Thrusts)，則將另案由 Dr. Mruthyunjaya 依各代表在本次會議各項活動（包括：Partnership, Collaboration and Networking, Capacity Development, Policy Advocacy, Knowledge and information sharing, and Foresight and visioning 等項目）之共識意見而撰擬。

三、 另有關本次會議修正後之“Revised APAARI Vision 2030”版本，則另依各國代表之意見予以精簡至 6 至 7 頁後，依暫定之程序（詳如附件 4），提後續各項會議討論，並預計在 2016 年確認之。

肆、 心得及建議事項

- 一、此次會議期間可體會參與之 APAARI 各國代表相當和諧友善，對 APAARI 的功能相當的肯定，也高度期待它能持續並強化在亞洲太平地區農業科技交流上的功能。
- 二、在會議中多次提到我國的支持，尤其肯定我國在農業生物科技交流方面的貢獻 (Asia-Pacific Consortium on Agriculture Biotechnology, APCoAB)。考量我國外交常受局限的現況，APAARI 仍是我國與亞洲太平洋地區國家進行農業發展交流合作難得的平台，值得持續維繫，甚至強化我方的功能與影響力。
- 三、為因應國際科技、政治、社會、及經濟局勢的變遷，APAARI 已開始檢討及研擬未來發展的方向，我國也應及早一方面回顧檢討我方的效益，另一方面研擬在此機構內之發展策略。
- 四、會議攜回之資料，“Revised APAARI Vision 2030”、“Twenty Two Years of APAARI – A Retrospective”，以及後續會議時程表，提供本會國際處參酌，作為研擬我國在此機構發展策略之參考。

伍、 會議活動相關照片



圖 1. 討論實況。



圖 2. 討論實況。



圖 3. 與會人員合影。

陸、 相關附件

**Draft Program of APAARI Visioning Exercise
4th and 5th August 2015**

附件 1

#	Date and Time	Agenda	Facilitation
	4/08/2015	Day One – Tuesday	
I	9.00-10.00	Introductory Session	
1.1	9:00	Welcome/Background : Steps/ Scope/ Program/ Process, roles, etc.	Dr Raghunath Ghodake
1.2	9:10	Opening Remark:	Dr Simon Hearn, Chairman
1.3	9:20	Base Presentation	Dr Mruthyunjaya
	10:00	Tea/Coffee Break	
II	10:30	Needs and Challenges for Agricultural Research and Innovations for Sustainable Development in the Asia-Pacific Region	Group Exercise(3 Groups of 3/4 members each) facilitated by Ajit Maru
2.1.		i) Overall Development Goals (SDGs), Agricultural and food Systems Development Goals, Developing ARI4D Systems Goals in the AP Region, and how these can contribute in hierarchical manner ii) Identifying and prioritizing Current and Possible Future Needs, Challenges, Constraints, Opportunities and Capacities in ARI4D	“
2.2		What are the positive lessons learnt by APAARI in 22 years? What we did best? What we should continue to do? What should we add to our actions?	“
	12:30-14.00	Lunch	
III		What is and What Would be Tomorrow’s APAARI	
3.1	14.00	Brief Presentation of Survey Results/ Assessment	
3.2	14:10	Coming to a Common Understanding of APAARI? What is it, why and how it acts?	“

		APAARI's Values and Beliefs	“
		APAARI's Uniqueness as an Organization	
	15:30	Tea	
3.3		APAARI's Core Competence	“
		APAARI's Purpose: Current and Future	“
	17:30	Close of Day 1	
	<u>5/08/2015</u>	Day Two (Wednesday)	
	9:00	Recap Previous Day	
<u>IV</u>		Forming APAARI's Vision	
4.1	9:15	Rationale for a New Vision, Goal, Mission. Do we restructure (Change the way APAARI works and is structured), reengineer (keep the same structure but strengthen weaknesses and reduce threats) or redesign (start afresh assuming there is nothing existing) APAARI?	“
4.2		APAARI's future Vision (Drafting)	
	10:00	Tea/Coffee Break	
4.3	10:30	APAARI's future Goal (s) (Drafting)	
4.4		APAARI's Mission (Drafting)	
	12:30-14:00	Lunch	
4.5	14:00	Key Objectives/Outcomes to Contribute to Goals(s) as consistent with Mission	
4.6		Key (Broad) Strategies, addressing objectives and achieving outcomes	
4.7		How will we evaluate APAARI's Achievements in the future?	“
	15.30	Afternoon Tea	
4.8	15:50	Bringing Everything Together:	“
		The APAARI Theory of Change	“
4.9		Outline of the APAARI Vision Document, Drafting Committee, Process, Schedule, etc.	Dr. Mruthyunjaya leads the discussion
4.10		Way Forward and Concluding Remarks	Executive Secretary and Chair
	17:30	Close of Meeting	

Dinner Hosted by APAARI

APAARI Visioning Exercise

附件 2

4 - 5 August 2015, Kuala Lumpur, Malaysia

List of Participants

#	Name	Country/Organization	Role
1	Dr Mruthyunjaya	A-701, Vasundhra Apartments Sector-6, Plot 16, Dwarka New Delhi 110075, India Email: Mruthyunjaya1947@gmail.com	Lead Resource Person
2	Dr Simon Hearn	Australian Centre for International Agricultural Research (ACIAR), PO Box 1571, Canberra ACT 2617, Australia Email: Simon.Hearn@aciarc.gov.au	Chairman
3	Dr Ajit Maru	Senior Program Officer GFAR, FAO Headquarters, Viale delle Terme di Caracalla, 00100, Rome, Italy Email: ajit.maru@fao.org	Facilitator
4	Mr David Shearer	General Manager Australian Centre for International Agricultural Research (ACIAR), PO Box 1571 Canberra ACT 2617 Australia Email: david.shearer@aciarc.gov.au	Participant
5	Dr Raghunath Ghodake	Executive Secretary 4 th Floor, FAO RAP Annex Building, 202/1 Larn Luang Road, Pomprab Sattrupai, Bangkok 10100 Thailand Email: raghunath.ghodake760@gmail.com, Raghunath.ghodake@apaari.org	Participant/ Logistical Facilitation
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1. Preamble

The Asia Pacific Association of Agricultural Research Institutions (APAARI) was established during 1990 under the sponsorship of FAO as a non-profit, neutral and apolitical regional association of agricultural research institutions (APAARI, 2015). The overall objective of the Association was to foster the agricultural research and development in the Asia-Pacific Region (APR) so as to help address the concerns of hunger, poverty, environmental degradation and sustainability of agricultural production. The specific objectives were to: i) promote the exchange of scientific and technical know-how and information in agriculture, ii) encourage the establishment of appropriate co-operative research and training programs in accordance with identified regional, bilateral or national needs and priorities, iii) assist in prioritizing NARS/regional needs; strengthening of research organizational and management capabilities of member institutions including information and communication technology, iv) strengthening cross-linkages between national, regional and international research centres and organizations, including universities, through involvement in jointly planned research and training programs, and v) promote collaborative research among member institutions, including need based support to regional networks. In pursuance of these objectives, the functions of the Association as per Article IV (amended Constitution,2009) may undertake one or more of the activities: i) convene general assembly to discuss the Association's administration, general program, policies, and priorities, ii) organize working groups, meetings and seminars to discuss specific problems or sponsor technical studies, training courses and workshops, iii) collect, collate and disseminate research information, iv) maintain links with agencies, institutions, or organizations and other entities undertaking similar activities within and outside the region including donor institutions, and v) promote collaborative research among member institutions. Its membership consists of national agricultural research institutions/councils/organizations/universities from countries of the region, ARD fora in other regions, etc. In countries where agricultural research is handled directly by a government department, the relevant unit/bureau will be eligible to become the member of the Association.

In pursuance of the objectives and defined functions, APAARI initiated its activities in two phases: i) prepared a perspective mid-term plan-1995-2000 (APAARI, 1995), and ii) developed its Vision 2025 (APAARI 2000). A retrospective account of its twenty two years of work has been published by APAARI recently (APAARI, 2014). A critical

review of the retrospective account indicates that APAARI has been able to provide a useful platform for advocacy and awareness on issues of agricultural research and a forum for dialogue on issues related to ARI4D in the APR. Notwithstanding its past contributions, the future expectations on APAARI to effectively contribute to rapid transformational changes in APR are far greater, varied and highly demanding.

2. Changing context and the new role of APAARI

Despite rapid political, social and economic progress and nearly successful implementation of MDGs, the region's persistent problems of poverty and hunger still prevail. In the context of developing future framework of Sustainable Development Goals (SDGs) beyond 2015 (UN, 2015), the review of MDGs in the APR region highlighted 12 goal areas: zero-income poverty; zero hunger and malnutrition; gender equality; decent jobs for everyone of working age; health for all; improved living conditions with focus on the poor; quality education for all; liveable cities; environmental responsibility and management of natural resources; disaster risk reduction; accountable and responsive Governments and; strong development partnerships (UNESCAP, 2013, Bangkok Declaration, 2013). These goals set the boundary and direction for the future orientation of agriculture/agri-food system transformation beyond 2015 in APR since agriculture and agri-food system is key to reaching development goals of ending hunger and poverty in the region. The broad goals with direct reference to APAARI in particular, demand attention by the agriculture/agri-food systems in the region at least in three respects: a) Meeting the overarching needs of APR ii) Addressing the challenges and iii) Accessing and utilizing the emerging uncommon opportunities.

Some of the important overall key needs of APR include:

- a) **Inclusion of lagging, least developed countries:** For various reasons, many countries in the APR like Afghanistan, Myanmar, Cambodia, Pacific-island countries, land locked developing countries, least developed countries etc. are left out of purview of guided transformation process. They need to be given a new deal.
- b) **Emphasis on small holder farmers, women and youth and consumers:** Land availability per person in agriculture in the region (0.3ha) is almost one-fifth of that in the rest of the world (1.4 ha). Over 80% of the world's small and marginal farmers, over 50% of small and marginal farmers who are women

and about 60 % of the world youth reside in the region (IFAD, 2014; Singh, 2010). Women are not even considered as farmers and youth see little future in farming (GFAR, 2012). In view of their large number, social problems of exclusion and proven/growing importance/contributions of them to development in the APR, they need to be at the centre of innovation and development and empowered to participate effectively in highly competitive globalized factor and product markets (APAARI, 2009). For seeking change in their lives, business as usual is not clearly an option (GFAR, 2013).

- c) **Recognizing institutional plurality:** There are many credible institutions (GO, NGO, CSO, private sector organizations, etc.) working towards promoting agricultural development in APR whose active partnership with APAARI will supplement and compliment rapid agricultural transformation. Development partnership should form the centrepiece of Asia-Pacific cooperation in the years ahead as agreed in the Bangkok Declaration (http://apmd2013.unescap.org/documents/APMD2013_declaration.pdf).

Effective and equitable partnership is essential to reduce fragmentation/isolation, breakdown the institutional divides the walls that prevent effective collaboration and partnership towards shared goals in the system and enable each actor to deliver their best value in a wider frame of actions towards impact (GFAR, 2012). Networking is evolving as a useful mechanism particularly to engage the business-private sector in the sustainable development process through consultations, capacity building, policy advocacy and peer review (UNESCAP, 2013). This needs further boost.

- d) **Wider membership:** Current membership of APAARI restricts it from diverse talents, novel contributions particularly to address the changing needs and challenges of agriculture/agri-food system and therefore needs expansion to cover broader multi-institutional architecture of scientific research and development agencies which have mandate, talent and proven interest and ability to contribute to rapid agricultural transformation in APR. Expanding membership makes sense in terms of resource mobilization as well.
- e) **Rural-urban continuum:** Rapid urbanization is more pronounced in APR as a result of migration from the rural areas. It is predicted that about 60% of the population will live in cities by 2030. Outmigration of young males and the

skilled is leading to the greying and feminization of farms and fishing villages-rural communities are peopled by the elderly and women (FAO, 2004). It is expected that the proportion of old adults will rise from 10% now to 25% in 2050 (UNESCAP, 2013). This development requires planned attention to ensure food supply, distribution system with other attendant problems of growing income inequality between rural and urban areas with adverse effects on poverty reduction, and increased risk of social conflict and political instability, shelter, water, energy, health and sanitation, employment, etc. (UNESCAP, 2015).

- f) **Harnessing Alternate Options for Sustainable Development:** Two options which are mutually dependent and have demonstrated significant benefits to increase rural income and reduce poverty in some Asian countries (eg. China, India) are, i) Promoting the growth of Rural Non-Farm Economy (RNFE) and ii) Strengthening Secondary Agriculture.

RNFE: As a part of diversification of rural economy and livelihoods, and a pathway out of poverty, the RNFE has considerable potential (IFAD, 2011). For most of the countries in the region, rural households receive substantial income from non-farm activities. With constraints on farm expansion, continuing growth of rural population, development of RNFE has a major role to play in any poverty reducing strategy. It also has an important safety net role particularly under increasing multiple disaster shocks, and it tightens rural labour market by rising rural wages. But the availability of human, financial, and physical capital constrain growth of RNFE. Policy biases and inequity in access to markets and credit need to be remedied to promote RNFE.

Secondary Agriculture: In the process of socio-economic transformation, the countries in the region have to transit from an agriculture based economy to a product-and-services based economy and eventually move towards a knowledge based economy. Building agro-based industries in cluster of rural villages/towns based on agri-bio-resources has to be done in a clustered manner so that they can be supported well by input of raw materials, trained manpower, schools, hospitals, etc. Creating such clustered centre of activities (rural growth hubs) and connecting them to nearby towns/cities would permit farmers to process their products and add value and building value added secondary agriculture. Secondary agriculture adds value, creates jobs, reduces pollution, uses agro-resources, improves farm economy, builds rural agro-industries, increases international trade, adds quality to the life of rural India and makes agriculture internationally competitive. It is demonstrated that secondary agriculture can add two to three fold value to primary agriculture and

thus invigorate not only the rural economy but also urban economy as the capacity of rural people to absorb goods and services of urban economy increases. This is the surest way to increase rural income, reduce rural poverty and rural-urban income inequity (Verma, 2008).

- g) **Provision of better amenities in rural areas:** Recreation amenities, improved infrastructure (physical connectivity by rural roads, electronic connectivity by communication, and knowledge connectivity by establishing professional and technical institutions) and services in rural areas are very important for creation of jobs, slowing migration from rural areas to urban areas and better rural livelihoods.
- h) **Preserving cultural heritage:** Strategies for sustainable development should be appropriate to the national context and build on intangible assets such as historical insights, cultural heritage and indigenous knowledge. Culture can be a powerful driver of development with community-wide social, economic and environmental impacts (UNESCAP, 2013). Diverse communities, cultures and traditions prevailing in Asian countries can serve as time tested, invaluable reservoir of wisdom during changing, challenging times and hence to be protected, preserved and optimally utilized.

Some of the key challenges include:

- a) **Accelerating productivity of crop and livestock systems, and producing affordable, safe, healthy, nutritious and high quality food:**

The rates of growth in yield of most crops in APR have been declining. Food production has to double by 2050 (IFAD, 2014). There is an average yield gap of about 30% of the potential yields. This gap has to be bridged against the odds of significant negative environmental effects. The APR uses 3 times more resources than the world average per unit of GDP (UNESCAP, 2013). Water scarcity and land degradation are worsening in the region. Over 28% of the region's landscape is severely degraded and its internal water resources are only about half the world's average (FAO, 2004). More sustainable use of degrading/reducing/limited resources (land, labour, water, agro-biodiversity, inputs particularly, mineral fertilizer) and continuously higher investments in improved technologies including farm mechanization combined with institutional innovations and supportive policies like clearly defined property rights, IPRs to incentivise entry of private sector in ARD and institutional arrangements are required. Further, annual growth in agricultural

capital stock (ACS) has slowed down in the last decade, only a fraction of FDI and ODA is going to agriculture, highly varied government expenditure on agriculture and AR4D among countries in the region (FAO and OECD, 2013). This trend needs reversal.

b) High pressure on forests:

Transformational land-use change driven by growing demand for food, fodder, fiber, and energy is directly linked to the future of forests and trees as providers of ecosystem goods and services to society. In the Region's tropical countries, loss of natural forests is continuing unabated threatening the source of income, subsistence and survival of particularly poor people in the region. Presently, about 28% of region's land area retains forest cover, equivalent to only a quarter of a hectare of world land per person-the lowest rate for any region (FAO, 2004). Though there have been more efforts in the region towards tropical forest plantation development in recent years, but government budgets for forest administration are on the decline. The recent move by the governments in the region to manage forests by local communities, local governments and CSOs is an important positive development and a right step in sustainable forestry management in the region (FAO, 2004).

c) Coping with risks of climate change, variability and extreme weather aberrations and price risks and economic shocks:

The region suffers from a proportionately larger share of the world's catastrophic natural and man-made disasters (wild fires, cyclones, landslides, floods, droughts, civil unrests). A person living in APR is almost twice as likely to be adversely affected by natural disaster as compared to a person in Africa, almost 6 times more in Latin America and Caribbean, almost 30 times more in North America and Europe (UNESCAP, 2013). The incidence and impacts of disasters are also increasing in the region (FAO, 2004).

A major new factor affecting natural resources and their use is climate change and the extreme weather events associated with it (CGIAR, 2015). Climate change represents an immediate and unprecedented threat to the food security in the region. A 4 degree centigrade temperature rise, significant emissions of CHG from agriculture, and other land uses are now predicted with enormous consequences needing climate change mitigation and adaptation efforts. Climate change will cause yield declines for most of the important crops (World Bank, 2015).

In a globalized world, world economies are closely integrated. There would be greater pass through of cross-border cost shocks and co-movement of inflation rates with ripple effects everywhere (www.bis.org/pub). The Region's economic outlook is subject to downside risks posed by rising inflationary pressures driven by high food, energy prices and continued pressure on exchange rates and asset prices emanating

from large and volatile capital flows (UNESCAP, 2013). The price inflation of 2007, 2008 have clearly demonstrated how the poor will be hit hard under such multiple shocks. It is estimated that in 2010, high food prices kept 19 million people in poverty. The triple food, fuel and financial crisis which reached a critical stage in 2008, as many as 21 million people could have been pushed back below poverty line during 2009-10 (UNESCAP, 2013).

d) Preventing and managing spread of trans-boundary diseases of human beings, animals and plants:

Trans-boundary diseases are a permanent threat to food security, human health and welfare of mankind. Such diseases like severe acute respiratory syndrome (SARS), bird flu, Ug99 (wheat stem rust) have created panic and untold miseries in many countries in recent years with enormous economic implications and threatened human health- both through the private and public costs of the outbreak and spread and through the costs of the measures taken at individual, collective and international levels in order to prevent or control infection and disease outbreaks (FAO, 2004).

e) Expanding agri-business, markets and food retailing and linking farmers with markets and value chains:

Economic growth, growing urbanization, globalization, reduced state intervention and import barriers have contributed to expanding domestic and international markets. Changes in the diets and food systems towards high value products like F&V, livestock and dairy products, fish, sugar, oil and dramatic rise in the prices of them in the last 10 years make them attractive as value chains opportunity to small farm holders (OECD-FAO, 2013). Further, as a result of increased demand for high value and processed foods, there has been a rapid emergence of better integrated agricultural supply chains and supermarkets. The Bangkok declaration highlights to work closer together to integrate markets, build seamless connectivity, enhance resilience to address vulnerabilities to risks associated with natural disasters (Bangkok Declaration, 2013). The success of all these market oriented developments depends on consistent and regular supply of agri-business produce by linking farmers with markets, state of the art post-harvest and processing facilities, adhering to quality and safety standards, entrepreneurial skills, business and regulatory experience, contractual arrangements and enforcements, etc. In many countries, farmers have poor access to both input and output markets depriving them from benefits of all market oriented developments. Better roads, communication and transport, processing and post harvest management, storage, institutions and supportive policies are needed to benefit farmers to ably access markets and benefit.

f) Expanding opportunities for communication and capacity development to secure adoption of agricultural technologies, innovations and best practices:

Science, discoveries, technology, creativity and innovations are central to promoting progress and are among the most powerful tools for sustainable solutions and rapid socio-economic transformation. Equally important is harnessing opportunities in information and communication technology (eg. Cell Phones), space technology applications and capacity development through upgrading knowledge and skills of farmers, traders, and all those involved in agricultural value chains to secure adoption of best technologies, innovations and practices in production, processing, marketing and trade (UNESCAP, 2014). In order to foster transformation towards sustainable development, there are several key areas which require significant enhancement in institutional and human capacity. Besides capacity development in domain knowledge, capacity development for data collection, analysis and providing feedback to support institutional and policy change also requires substantial strengthening (UNESCAP, 2013).

g) Linking multi-disciplinary agricultural research to development outcomes with innovation pathways, desired milestones and targets:

The linkage of scientific advances to development outcomes is very weak presently and it has become more important and increasingly becoming a prerequisite for securing more development funding to research undertakings in future. In other words, research systems need to be more accountable to their beneficiaries rather than focus on the outcomes of scientific achievements alone (GFAR, 2010). Priorities need to integrate science with development in consideration of issues such as sustainable intensification, better access to safe, nutritious food by vulnerable communities, increasing agricultural incomes through value-adding post harvest management and creating entrepreneurial opportunities for resource poor smallholder farmers and producers (GFAR, 2012). Strengthening monitoring and evaluation practices can contribute to forging strong linkages with development outcomes.

h) Sustainable generation and use of energy:

APR accounts for nearly 60% of the world energy demand and its energy demand is on the rise. The growth in energy demand will be higher in all sectors including residential, commercial, agriculture and fishery and transport sector. The region is a net energy importer (ADB, 2013). The critical energy issues include greater regional

coordination on energy security, removing barriers to energy production, consumption, trade and investment, facilitating LNG trade, promoting new and renewable energy, energy efficiency and smart communities, keeping up safe nuclear power development and cooperating on clean fossil fuel. The energy uncertainties in the region require the support of robust and resilient energy networks and promoting flexible and resilient energy systems and markets (Otte et.al. 2013; Cronshaw and Grafton, 2014).

i) **Weak and underfunded ARI4D Systems:**

Many ARI4D systems in the region continue to remain constrained with bottlenecks of bureaucracy, capacity, under-investment and linkages with wider development processes and with farmers, private sector and NGOs. They are ill-equipped to ably support the changing context of APR (GFAR, 2012). They must become agile and adaptable in responding to the fast changing external environment (GFAR, 2010). Priority attention to strengthen them is necessary since APPARI has the primary responsibility to strengthen them. APAARI (2009) has recommended that the investments in agricultural research in APR need to be at least doubled from its current level of about US\$ 10 billion (APPARI, 2009).

Emerging opportunities

Several opportunities are also emerging in terms of livestock and aquaculture revolution in the region, emerging new sciences, scientific advances, technologies and innovations in a range of scientific and social science disciplines at a remarkable speed from telecommunications to micro-finance, molecular biology to meteorology (GFAR, 2010). Institutional innovations and partnerships aligning with new understanding are evolving for collective actions at global levels to solve complex, interconnected problems that affect the whole community of nations. There is renewed recognition and expressions of political will especially in terms of government policies of the role and impact of agriculture as a major driver of economic and social development and specific role of ARI4D in that. The other positive developments include, political recognition of the role of ARI4D at the global level, new international mechanisms involving UN agencies, the G 20, the World Economic Forum, the revamped Committee on Food Security, establishment and growing recognition of GFAR as the open and inclusive mechanism for action among all stakeholders at the global level and an expanded range of development partners creating new ways of coordinating and delivering support, often involving the private sector. There is greater vertical coordination in supply chains, policy reforms and reach out directly to the poor by supporting investments in human capital, health, nutrition, education, and greater networking possibilities in knowledge, skills,

technology with sub-regional organizations like ASEAN, SAARC, APEC, Shanghai Cooperative Organization, APC, BRICS Bank, etc. These opportunities and positive developments are important but not ably accessed and utilized enough in the region. APAARI can facilitate all these in a big way.

The above account of diagnostic of needs, challenges and opportunities offer all the reasons why significant steps need to be taken now if a true transformed regional agricultural research system for development is to evolve. The transformation process may be difficult but not impossible. It is bound to be painful also owing to stubbornly high, widespread poverty, deprivation and hunger, fast rising income inequality (UNESCAP, 2015). For instance, the APR still have about 63% of the world's hungry and malnourished, 50% of the world's extreme poor and 70% of the world's undernourished children and women (World Bank, 2015). Economic progress and population growth have increased pressure on food supplies. Donor interest is mainly directed towards Africa than Asia-Pacific.

From the above, it is clearly evident that, the national, regional and international organizations and communities must quickly change and reform in crafting new directions towards sustainable development in the region. While doing so, uncommon opportunities through application of new sciences, institutional innovations at all levels and learning from policy reforms in different countries may have to be effectively factored in. Realizing the challenges facing agriculture and food research for development are rapidly evolving along with unlimited opportunities, many organizations like CGIAR, GFAR, FAO, etc. have already initiated reforms, developing strategic frameworks like SRF of CGIAR (CGIAR, 2015) and GCARD Road Map (GFAR 2012) and trying to redesign their AR4D agenda. In a similar way APAARI's General Assembly recommended in November, 2014 to revisit its Vision 2025 and develop new strategic framework. Moreover, the year 2015 makes a watershed in global policy making. Building on the MDGs, the world is set to adopt SDGs in 2015 (UN, 2015). Subsuming unattended MDGs, the success of SDGs will depend on how effectively the APR makes economic growth robust, inclusive and sustainable (UNESCAP, 2015). Hence, it is highly opportune and timely step by APAARI to review and recast its earlier vision, mission, goal and broad strategic framework towards meeting sustainable development goals of Asia Pacific region.

3. Refocusing APAARI Vision, Mission and Goal

APAARI is a unique organization as it is voluntary, self-mandated, apolitical and multi-stakeholder partnership organization in APR with more than 25 years of significant contributions. It has established connections and networks and has authority/goodwill with a focus on contributing to agricultural development in the

APR through partnership and collaboration in research and innovations of agricultural systems.

In the conduct of business of any organization, particularly involved in service functions like facilitation of ARI4SD, dealing with people and institutions who/which are critical for success becomes important. Even as the vision, mission, goals, purposes may change to keep pace with the dynamic national and international context, APAARI's core values may have to remain intact to inspire shareholders and stakeholders that APAARI is their most trusted and dependable ally for sustainable development in the region.

3.1 APAARI'S core values:

APAARI is:

Visionary: It foresees the future, working at the frontier, realizing the full potential of the research and innovations for SD, advancing ideas and innovations and encouraging creativity and initiative

Wedded to merit and excellence: Investing the available resources optimally to leverage full potential of the research for development community and managing a capable and motivated organization that provides an enabling environment for attaining excellence

Learning and growing: Continually enhancing knowledge and skills to identify opportunities and exploit them for the growth and development of community, system and the nation

Inclusive: Strongly believes that involving and including the contributions of all potential players and exploiting unlimited opportunities of partnerships both nationally and internationally only can meet the growing aspirations of the stakeholders

Accountable with highest integrity: Operates with the highest performance standards and integrity, openness and transparency and maintaining quality in administration, management and oversight

3.2 Vision 2030:

“APAARI will strengthen agri-food research and innovation systems so that they effectively contribute to achieving sustainable development goals by ending hunger, malnutrition, income poverty and environmental degradation in all countries in Asia Pacific sub-regions and region as a whole”

3.3 Mission:

“APAARI promotes, facilitates and coordinates agri-food research and innovation systems through partnerships, advocacy, capacity development, and sharing information, knowledge, skills and technology for sustainable development of small farm households, women and youth and consumers in APR”

3.4 Goal:

“APAARI will strengthen agri-food research and innovation systems of APR so that they effectively contribute to achieving sustainable development goals at national, sub-regional and regional levels”

3.5 Purpose:

“To provide a platform for agricultural research and innovation organizations/interests/constituencies/ to deliberate, decide and act on critical needs/challenges/opportunities/priorities and strategies targeting especially small holding farmers, women and youth with core focus on advocacy, coordination, research collaboration, information sharing and capacity development for sustainable development in the region”

3.6 Ambition by 2030: APAARI sets its ambition to attain by 2030:

- a) Be something like FAO but with a broader/regional scope
- b) Leading think tank with high quality expertise, regional voice and a hub of high quality capacity development, research collaboration with high priority for small holder farmers, women and youth in APR
- c) Most sought after repository of knowledge, information, data, and quality publications in the APR
- d) Well recognized centre of excellence to influence agri-business policy making and institutional development
- e) Continuously inspire by vigorous commitment to add value to the functions and actions of its partners and programs
- f) Policy advocacy for high investment, capacity development, management of ARI4D institutions, knowledge, skills and technology sharing
- g) Transparent, financially secured with best governance practices and work culture to lead the ARD systems in APR to attain acceptable level of regional food and nutritional security combined with food safety and environmental improvement

3.7 New core competencies required to meet the Ambition 2030

APAARI may need to acquire new competencies and skills if its Ambition 2030 is to be achieved. Some of them include:

Knowledge broker; foresight planning; capacity/ability to build and consistently sustain /manage continuous links/partnership; partners skills development, advocacy and policy promotion skills; enabling openness and sharing/exchanging for research involvement with wider regional, national development programs, actions and policies, particularly in new sciences, modern communication methods, extended agri-business value chains, skills relating to address impact assessment and adoption pathways; more structured approach to capacity development and enhanced capacity to inspire itself and members through meeting urgent needs of APR; professional touch with a human face, commitment and consistency of action, transparency, openness in action, etc.

4. Broad Indicative Strategic Framework

The broad indicative strategic framework to implement the Revised APAARI Vision 2030 utilizes APAARI's unique features, values, vision, mission, goals, purpose, aims, institutional memory on experiences and lessons learned particularly in delivering agricultural research priorities, communication and partnerships during the past 22 years in strengthening the building blocks of the agricultural research and innovation systems in the region, namely: technologies and innovations, knowledge, capability, collaboration, FOs, CSOs, NGOs, agri-business and policy setting and decision making. By implementing the Revised Vision 2030 through a Strategic Plan, Medium Term Plan, APAARI is committed to address all the identified needs, challenges and opportunities and ensure excellence, enhance cooperation among different disciplines, broaden partnerships and alliances, improve management processes, leverage resources and communicate APAARI message by achieving the following broad strategic outcomes by 2030. For each broad strategic outcome, rationale, intended outputs need to be defined. For each output, indicators, baseline, target deliverables, means of verification and assumptions (if any) may need to be developed.

Strategic Outcome 1: Demand driven research prioritization in each country of the Asia-Pacific region

Strategic Outcome 2: More trained human resource, and enhanced use of new sciences, innovations, soft skills, good agricultural practices, better and faster communication, creative institutional innovations and responsive policy initiatives with future orientation to address persisting and anticipated challenges to agriculture and agri-food systems in the region

Strategic Outcome 3: More research publications and other science, knowledge and innovation products, data and information base, processes of better quality discussing and demonstrating close linkage with wide development outcomes in the Region

Strategic Outcome 4: More number of collaborative ARI4SD projects among NARS, other research for development systems/networks, IARCs, and their partners and stakeholders in the region with active involvement, coordination and facilitation from APAARI in planning, implementation and evaluation

Strategic Outcome 5: APAARI to work more with sub-regional organizations like ASEAN, SAARC, APEC, Shanghai Cooperation Organization, APC, UNESCAP institutions and other regional, CGIAR and other global organizations to help in the planning, implementation and evaluation of their programs by providing technologies, skills, and knowledge backup

Strategic Outcome 6: More impact assessment studies highlighting the evidences of trends towards improvement in attaining system level outcome of improved food availability, nutrition, gender and youth engagement, and natural resource systems and ecosystem services in the region

Strategic Outcome 7: Greater resource allocation by Governments and private sector to agriculture in general and ARI4SD in particular in the region

Strategic Outcome 8: Policy dialogues to help frame national policies reinforcing legal frameworks/instruments and supporting mechanisms that respond to domestic requirements and are consistent with the international policy and regulatory frameworks

Strategic Outcome 9: NARS themselves become more agile and adaptable and synergistically work together sharing resources and expertise, negotiate with donors (FAO, IFAD, etc.) and partners (FAO, GFAR, CGIAR, etc.) facilitated by APAARI and

more resources (human, financial, etc.) mobilized and professionally managed by APAARI to fully implement the revised APAARI Vision 2030

Strategic Thrusts (STs):

The strategic thrusts in the light of objectives of APAARI enunciated in its constitution, revised Vision 2030 and intermediate outcomes outlined above, clearly drive action bound intentions and guide all the functions of APAARI to attain the Revised APAARI Vision 2030 during the implementation of a Broad Indicative Strategic Results Framework 2016-30. It is important that APAARI aligns with GFAR and CCGIAR in terms of implementation of the required roles assigned to multi-stakeholder regional and sub-regional fora as outlined in their Strategic Plan/MTP (GFAR, 2013; CGIAR, 2015; World Bank, 2015). Some of the key strategic thrusts include:

ST1: Foresight, visioning and good governance for sustainable development in Asia-Pacific Region

ST2: More structured capacity development efforts for change particularly in new sciences, innovations, good and extended agri-business and value chain practices, soft skills, modern communication methods, advanced skills in impact measurement and adoption pathways, new institutional design and architecture, and relevant policy models, analysis and strategies

ST3: Research collaboration, networking and partnership in planning, implementation and evaluation.

ST4: Working with sub-regional organizations like ASEAN, SAARC, APC, UNESCAP institutions and other regional, CGIAR and global organizations to help in implementation of their programs by providing technology, skills and knowledge backup

ST5: Knowledge assembly and sharing for bridging knowledge gaps, global learning and benefits

ST6: Policy advocacy and communication to impress national governments to embrace ARI4D as an integral component of national agricultural policy, and mobilizing the political commitment for the promotion of policy environment and regulatory framework conducive for higher investment in ARI4D by

intergovernmental bodies, national and local governments, public and private sector agencies and civil society groups as well as local communities and effective implementation and impact on scale of all sustainable agricultural development programs

ST7: Measurements, monitoring and evaluation of human resources, financial resources, institutions, resource allocations, partnerships is built into all of APAARI's programs and activities for greater accountability and accelerated impact

ST8: APAARI to facilitate NARS to synergistically work among them in sharing resources and expertise and seek funding from donors and partners and APAARI itself mobilizes and professionally manages more resources and support of donors, partners and stakeholders for attaining the revised APAARI Vision 2030

6. Measuring Progress

It is important that APAARI sets rather realistic targets against its goals, aims, intended development outcomes and strategic thrusts and measures progress in terms of their realization in terms of targets/indicators of strategic outcomes stated earlier. Key performance indicators will be identified along with scheme of their measurement to be outlined in the detailed MTP and Strategic Results Framework. The results and the feedback will be regularly/periodically used for reformulation/on course correction of actions and improvement in performance. APAARI's image and credibility will be further enhanced through a regular Quinquennial Review. The Strategic Results Framework may be reviewed and revised if necessary taking into consideration the results of reviews, changing conditions and the needs of APR and recommendations and priorities of stakeholders.

7. Resource/Support Mobilization

Resources would remain a key to continued performance and future success of APAARI. The resources of APAARI so far is largely depended on the membership fee. However, in order to become an effective player for facilitating ARI4SD in the region, particularly under the complexity of new needs, challenges and rising expectations as reflected in the revised Vision 2030, ambitions by 2030, a clear cut strategy of aggressive resource mobilization and soliciting other support becomes inevitable.

Some important options for this may include, exploring possible bilateral partnerships with FAO, ADB, World Bank, IFAD, USAID, ACIAR, BMGF, CGIAR Centres and others; convincing CGIAR to partner with APAARI while planning and implementing Phase II of CRP programs; identifying and implementing new core themes which can also support other APAARI activities like APARIS, APCoAB; new membership drive; preparing a shelf of continuously updated project ideas in collaboration with beneficiary countries and actively promote it to funding agencies; promote in-kind contributions including experts, facilities and equipment and strengthening APAARI Secretariat will be a key next step to undertake Revised Vision 2030. The present lean secretariat would require strengthening with more experts and better professional management of resources for greater impact and visibility

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Stepwise Action Plan with Time Lines - Development of APAARI Vision			
Step	Action	Time Line	Remark
1	Intensive comments/contributions/suggestions on the draft Concept by the Lead Group Members and possible queries /suggestions by Dr Mruthyunjaya (Lead Resource Person)	Beginning immediately and continue until 30 June 2015	Draft CN is available as per EC documents
2	Assimilations, considerations and reflections of such comments/contribution and development of the first draft of the Vision document by the Lead Resource Person	July 2015	The first draft (when ready) will be sent to the Lead Group Members
3	Face-to-face brainstorming exercise involving the Lead Group Members in the first week of August in Bangkok for two full days to refine and develop the finer draft document	First week of August 2015	The dates will be slightly flexible and communicated later on
4	Needed refinements by the Lead Resource Person	By Mid August 2015	
5	Circulation of such draft document to wider groups including APAARI members, partners and relevant stakeholders for their comments/suggestions.	By end of September 2015	This process can be to seek frame-worked/ structured responses
6	Considerations to the approved SDGs to articulate any terms, messages, language, etc. and preparation of Final Draft	First week of October 2015	Hopefully SDGs will be approved by then
7	The final draft is sent to APAARI members and others as needed and consideration/reflection of any final refinements.	October/ November 2015	
8	The final draft presented to the EC and others (as present) for their approval.	December 2015	Coinciding with Policy Dialogue on Investment
9	Final editing and printing/ uploading, circulating, etc.	By the end of January 2016	
10	Approved Vision document will be followed by Strategy Planning, Medium-Term Operational Plan based on Theory of Change/Result Framework	During 2016	